



STATE OF WASHINGTON

STATE BUILDING CODE COUNCIL

Washington State Energy Code Development Standard Energy Code Proposal Form

Jan 2022

Log No. _____

Code being amended: ☐ Commercial Provisions ☒ Residential Provisions

Code Section #: Table 406.3, Option 3.5

Brief Description:

Allow slightly lower HSPF for cold climate central heat pumps that eliminate, or significantly reduce, the need for supplemental heat. To claim this credit in areas with design temperatures below 23°F, you must use a cold climate heat pump.

Proposed code change text: (Copy the existing text from the Integrated Draft, linked above, and then use underline for new text and ~~strikeout~~ for text to be deleted.)

3.5^a Air-source, centrally ducted heat pump with minimum HSPF of 11.0.

~~If you use a cold climate heat pump listed as a qualified product on the NEEP cold heat pump list, the minimum HSPF required for this credit is 10.0 HSPF.~~

~~In areas where the winter design temperature as specified in WAC 51-11C 80100 is 23°F or below, an air source heat pump serving a centrally ducted system shall be you must use a cold climate variable capacity heat pump listed as a qualified product on the NEEP cold climate heat pump list, the minimum HSPF required for this credit is 10.0 found on the NEEP cc ASHP qualified product list to claim this credit.~~

A centrally ducted air source cold climate variable capacity heat pump (cc VCHP) found on the NEEP cc VCHP qualified product list, you may use a system with a minimum of 10 HSPF.

In areas where the winter design temperature as specified in Appendix C is 23°F or below, an air-source centrally ducted heat pump shall be a cc VCHP as listed on the NEEP qualified product list.

MOVE this language to Chapter 6

The NEEP cold climate heat pump list can be found here: <https://neep.org/heating-electrification/ccashp-specification-product-list>.

To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the heating equipment type and the minimum equipment efficiency.

<Footnote a still applies and supplemental heat ≤ 5 kW may be used if needed.>

Purpose of code change:

Standard heat pumps should not be used in areas that need cold climate heat pumps. Using cold climate heat pumps will significantly reduce electric consumption associated with strip heat supplemental systems. Cold climate heat pumps have slightly lower HSPF due to defrost cycle and base pan heaters. This change will encourage the use of cold climate heat pumps and reduce the need for large supplemental heat systems with heat pumps.

Your amendment must meet one of the following criteria. Select at least one:

- | | |
|--|---|
| <input type="checkbox"/> Addresses a critical life/safety need. | <input type="checkbox"/> Consistency with state or federal regulations. |
| <input checked="" type="checkbox"/> The amendment clarifies the intent or application of the code. | <input type="checkbox"/> Addresses a unique character of the state. |
| <input checked="" type="checkbox"/> Addresses a specific state policy or statute.
(Note that energy conservation is a state policy) | <input type="checkbox"/> Corrects errors and omissions. |

Check the building types that would be impacted by your code change:

- | | | |
|---|---|--|
| <input checked="" type="checkbox"/> Single family/duplex/townhome | <input type="checkbox"/> Multi-family 4 + stories | <input type="checkbox"/> Institutional |
| <input checked="" type="checkbox"/> Multi-family 1 – 3 stories | <input type="checkbox"/> Commercial / Retail | <input type="checkbox"/> Industrial |

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Economic Impact Data Sheet

Is there an economic impact: ☒ Yes ☐ No

Briefly summarize your proposal's primary economic impacts and benefits to building owners, tenants, and businesses. If you answered "No" above, explain your reasoning.

Cold climate heat pump systems cost slightly more than standard heat pumps. However, they do not require supplemental heat, electrical connection for supplemental heat, and strip heat lockout accessories that add to the cost of standard heat pump systems.

Homeowners will have lower utility bills when they do not need supplemental strip heat in winter.

Provide your best estimate of the **construction cost** (or cost savings) of your code change proposal? (See OFM Life Cycle Cost [Analysis tool](#) and [Instructions](#); use these [Inputs](#). **Webinars on the tool can be found [Here](#) and [Here](#)**)

Click here to enter text.(For residential projects, also provide

Incremental cost of switching from a standard to a cold climate heat pump is estimated to be <\$1,500/ dwelling unit (net of material/labor for supplemental heat, electrical connection for supplemental heat, and strip heat lockout accessory)

Show calculations here, and list sources for costs/savings, or attach backup data pages

Estimated incremental cost increase from an 11 HSPF standard heat pump to a 10 HSPF cold climate heat pump is ≤\$2,500.

Cold climate heat pumps do not need strip heat (estimated cost: \$550 material and labor), electrical connection for strip heat (estimated cost: \$200 material and labor), and strip heat lockout kit (estimated cost: \$250 material and labor). Total estimated savings from avoided accessories with a cold climate heat pump: \$1,000.

Net cost increase to go from a standard heat pump plus supplemental accessories to a cold climate heat pump that does not require these accessories is estimated at ≤\$1,500 per dwelling (≤\$2,500 increased cost for cold climate heat pump minus \$1,000 avoided accessory cost for supplemental heat accessories).

Provide your best estimate of the **annual energy savings** (or additional energy use) for your code change proposal?

Show calculations here, and list sources for energy savings estimates, or attach backup data pages

Standard heat pump systems installed in WA typically have 5-10 kW supplemental strip heat systems

3 winter months @ 6 hours per day x 7.5 kW strip heat x \$0.10 per kWh = \$410.40 per year

List any **code enforcement** time for additional plan review or inspections that your proposal will require, in hours per permit application:

Minimal additional plan review time required. May require verifying NEEP cold climate heat pump qualified product list for some projects (it takes less than 5 minutes to locate a product on this list).

Instructions: Send this form as an email attachment, along with any other documentation available, to: sbcc@des.wa.gov. For further information, call the State Building Code Council at 360-407-9255.

All questions must be answered to be considered complete. Incomplete proposals will not be accepted.

Small Business Impact. Describe economic impacts to small businesses:

No known impacts

Housing Affordability. Describe economic impacts on housing affordability:

Lower utility bills make housing more affordable. Increased cost per home estimated to be ≤\$1,500 with annual energy savings estimated at \$410.40 (3.65-year payback period).

Other. Describe other qualitative cost and benefits to owners, to occupants, to the public, to the environment, and to other stakeholders that have not yet been discussed:

Encouraging use of cold climate heat pumps will advance state energy efficiency and decarbonization goals. This improvement to the heat pump energy credits will accelerate market transformation to energy efficient cold climate heat pump systems in residential new construction.

HVAC contractors frequently use oversized equipment to compensate for poor cold climate performance of standard systems. This change will make it easier for HVAC contractors to properly size systems. Properly sized systems use less energy and avoid short cycling in the shoulder season.

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